INSTRUCTIONS

-J05427 REV. 2011-03-03

SE LEFT (SPROCKET) CRANKSHAFT ROLLER BEARING KIT

GENERAL

Kit Number

24004-03B

Models

For model fitment information, see the Screamin' Eagle Pro Racing Parts catalog (English only).

Additional Parts Required

NOTE

You will need to obtain a 2003 or later service manual when performing this bearing installation on either a 1999 through 2002, or a 2003 or later Twin Cam model motorcycle.

You will need to obtain a 2007 or later service manual when performing this bearing installation on 2006 Twin Cam Dyna models, or all other 2007 Twin Cam model motorcycles.

In addition to the above kit components, this installation will require the separate purchase of an Oil Seal (H-D Part Number 12068).

Installation on a 1999 through 2002 engine will also require the separate purchase of one of the following spacers:

- H-D Part Number 24008-03 (1.54 inch, 39 mm long), for FLT models
- H-D Part Number 24038-03 (1.33 inch, 34 mm long), for Dyna models
- H-D Part Number 24039-03 (1.43 inch, 36 mm long), for Softail models

⚠WARNING

The rider's safety depends upon the correct installation of this kit. Use the appropriate service manual procedures. If the procedure is not within your capabilities or you do not have the correct tools, have a Harley-Davidson dealer perform the installation. Improper installation of this kit could result in death or serious injury. (00333a)

NOTE

This instruction sheet references service manual information. A service manual for your model motorcycle is required for this installation and is available from a Harley-Davidson Dealer.

Kit Contents

Table 1. Kit Contents

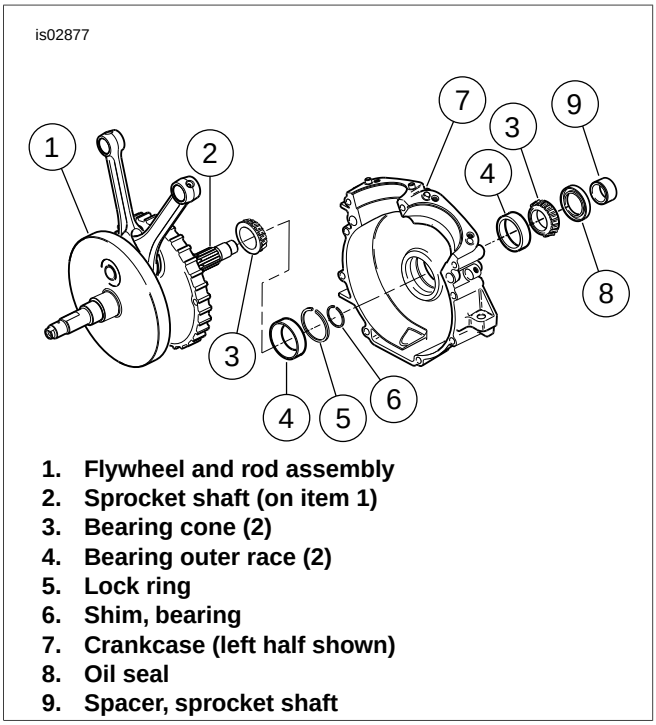
Description (Quantity)	Part Number
Bearing, flywheel (left side)	24605-07
Ring, retaining	35114-02
Washer, thrust (2) (service version)	8972
Race, inner	Not Sold Separately

INSTALLATION

1. Remove the engine from the motorcycle chassis. Refer to REMOVING ENGINE FROM CHASSIS in the applicable service manual.
2. Follow the instructions under TOP END OVERHAUL in the service manual to disassemble the engine top end.
3. See BOTTOM END OVERHAUL to disassemble the engine bottom end.
4. Refer to CRANKCASE DISASSEMBLY to disassemble the crankcase.
5. See LEFT CRANKCASE HALF to remove the crankshaft from the left crankcase half.
6. **For 2003 and later models with stock flywheel**, proceed to:

- "Thrust Washer and Bearing Race Removal/ Installation, 2003 and Later Models with Stock Flywheel" or
- "Flywheel Removal/ Installation, Models with 2003-Style Crankcase"

For 1999-2002 models with stock flywheel and for 1999 and later models with Screamin' Eagle Stroker flywheel and 2003-Style Crankcase, see Figure 1. Follow the instructions in the applicable 1999-2002 service manual to remove the existing tapered roller bearing from the crankshaft, then perform the following steps.



1. **Flywheel and rod assembly**
2. **Sprocket shaft (on item 1)**
3. **Bearing cone (2)**
4. **Bearing outer race (2)**
5. **Lock ring**
6. **Shim, bearing**
7. **Crankcase (left half shown)**
8. **Oil seal**
9. **Spacer, sprocket shaft**

Figure 1. Crankcase Removal, 1999-2002 Models with Stock Flywheel in 2003-Style Crankcase or 1999 and later Models with Screamin' Eagle Stroker Flywheel in 2003-Style Crankcase

THRUST WASHER AND BEARING RACE INSTALLATION

1999-2002 Models with Stock Flywheel in 2003-Style Crankcase

1999 and Later Models with Screamin' Eagle Stroker Flywheel in 2003-Style Crankcase

NOTE

On the models listed above, you will be removing the bearing cone from the sprocket shaft and replacing it with a thrust washer and bearing race from the new Roller Bearing Kit.

Follow the instructions in the applicable service manual to remove the tapered roller bearing from the left crankcase half and the bearing cone from the crankshaft.

*Perform the following steps to install the new thrust washer and roller bearing race to the crankshaft, then follow the instructions in the **2003** or later service manual to install the new roller bearing to the crankcase half.*

1. See Figure 5. Obtain a thrust washer (2) from the kit. Place the new thrust washer over the sprocket shaft (1) with the ink stamp facing outside (and the chamfer on the ID toward the flywheel).

⚠WARNING

Be sure to follow manufacturer's instructions when using the Robinair Heat Gun or any other radiant heating device. Failure to follow manufacturer's instructions can cause a fire, which could result in death or serious injury. (00379a)

- Always keep hands away from tool tip area and heat shrink attachment.
- Be sure to turn the "ON/OFF" switch to the "OFF" position after use.

2. Place the new bearing inner race (3) on a bench top. Using the Robinair Heat Gun (HD-25070), uniformly heat the bearing inner race for about 60 seconds, using a circular motion.
3. Wearing suitable gloves to protect hands from burns, place the heated bearing inner race over the sprocket shaft with number on bearing facing up.

NOTE

To facilitate installation without heat, apply a light penetrating oil to shaft and leading edge of bearing inner race.

NOTE

Never use both heat and penetrating oil. Use only one or the other. Heat can cause the penetrating oil to ignite resulting in flames or fire.

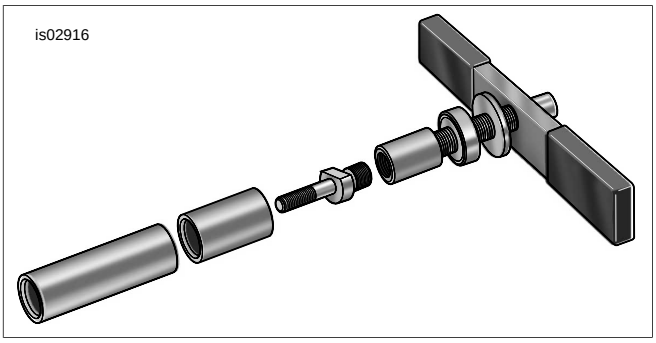
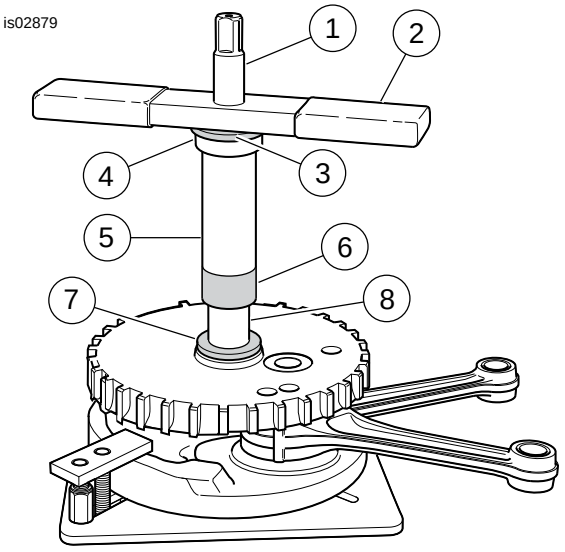


Figure 2. Sprocket Shaft Bearing Installer (Part Number HD-97225-55C)

4. Obtain the SPROCKET SHAFT TAPERED ROLLER BEARING CONE INSTALLER (HD-97225-55B). See Figure 2. Assemble the tool as described below:
   a. See Figure 3. Sparingly apply graphite lubricant to the threads of the pilot shaft (1) to prolong service life and verify smooth operation.
   b. Thread the pilot onto the sprocket shaft (8) until contact is made with the shoulder.
   c. Slide the sleeve (5) over the pilot until it contacts the bearing race (6).
   d. Slide the thrust bearing (4) and large flat washer (3) over the pilot until contact is made with the sleeve.
   e. Thread the handle (2) onto the pilot shaft.
5. See Figure 4. Rotate the handle of the tool in a clockwise direction until the bearing inner race bottoms against the thrust washer.



1. **Pilot shaft**
2. **Handle**
3. **Flat washer**
4. **Thrust bearing**
5. **Sleeve**
6. **Inner race**
7. **Thrust washer**
8. **Sprocket shaft**

Figure 3. Inner Race Installation

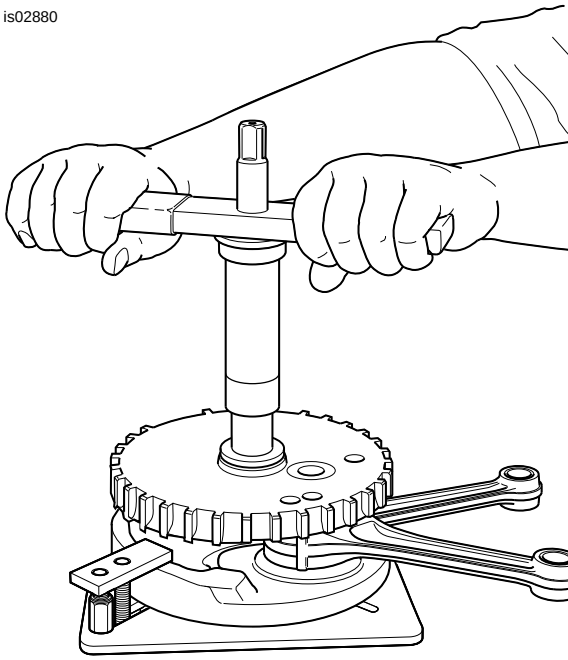
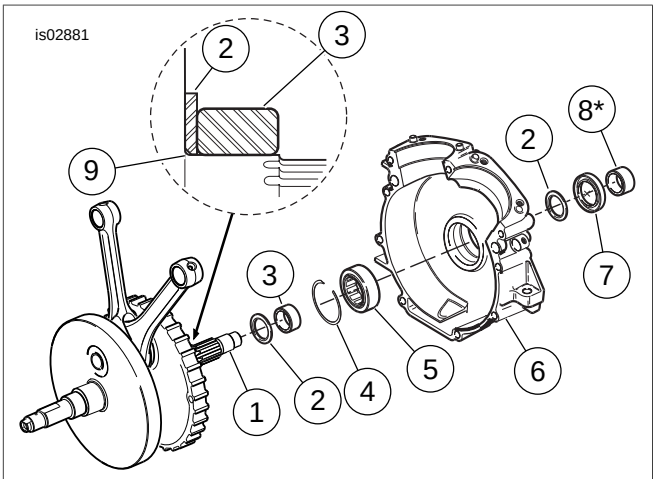


Figure 4. Inner Race onto Sprocket Shaft Installation

6. Remove the handle, flat washer, thrust bearing, sleeve and pilot from the sprocket shaft.
7. See Figure 5. Follow instructions in the 2003 or later service manual for assembly of the remaining components, crankcase assembly and installation in the chassis.



1. **Flywheel assembly (existing)**
2. **Thrust washer (2) (from kit)**
3. **Bearing inner race (from kit)**
4. **Lock ring (from kit)**
5. **Straight roller bearing (from kit)**
6. **Crankcase (left half shown) (new)**
7. **Seal (purchased separately)**
8. **Spacer (purchased separately) (See Table 1)**
9. **Chamfer**

Figure 5. Crankcase Installation, 1999-2002 Models with Stock Flywheel in 2003-Style Crankcase or 1999 and Later Models with Screamin' Eagle Stroker Flywheel in 2003-Style Crankcase

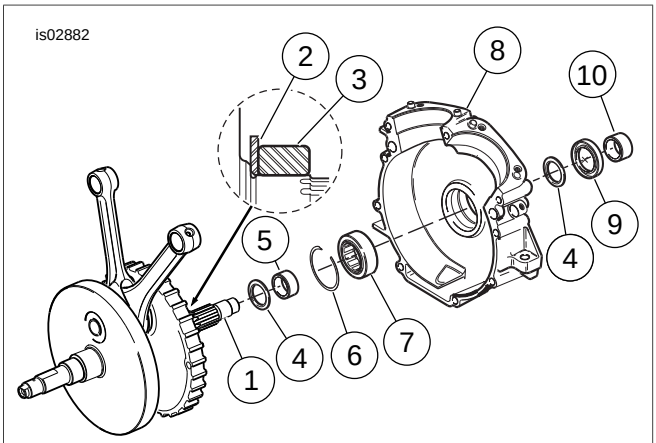
THRUST WASHER AND BEARING REMOVAL AND INSTALLATION

2003 and Later Models with Stock Flywheel

NOTE

On the models listed above, *you will be removing the existing bearing race and thrust washer from the sprocket side of the crankshaft (see Figure 6) and replacing them with a new race and thrust washer.*

Follow the instructions in the appropriate service manual to remove the existing bearing from the left crankcase half, then add the following procedures to remove and replace the existing bearing race and thrust washer onto the crankshaft.



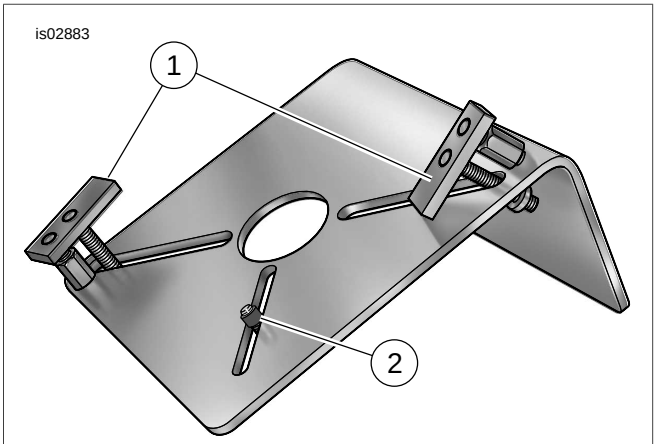
1. **Flywheel assembly (existing, includes items 2 and 3)**
2. **Thrust washer (remove and replace)**
3. **Bearing inner race (remove and replace)**
4. **Thrust washer (2) (from kit)**
5. **Bearing inner race (from kit)**
6. **Lock ring (from kit)**
7. **Straight roller bearing (from kit)**
8. **Crankcase (left side shown) (save existing parts)**
9. **Seal (purchased separately)**
10. **Spacer (save existing part)**

Figure 6. Bearing and Thrust Washer Installation, 2003 and Later Models with Stock Flywheel

Removal

1. Obtain FLYWHEEL SUPPORT FIXTURE (HD-44358), see Figure 7. Install brass jaws or shop towels around the teeth of a vise to prevent tool damage. Clamp the tool in the vise with the round hole topside.

2. Insert the right-side crankshaft end through the hole, resting the flywheel assembly on the fixture. Slide the knurled locating pin down the slot in the tool to engage the crank pin hole. Hand tighten the locating pin.



1. **Hold down clamp (2)**
2. **Locating pin**

Figure 7. Flywheel Fixture (Part Number HD-44358)

3. Slide the hold-down clamp down the slot to engage the inboard side of the right flywheel half, then hand tighten the knurled nut at the bottom to secure. Repeat this step to secure the hold-down clamp on the opposite side of the flywheel.

NOTE

For proper clamping force, hold-down clamp must not be tilted. Rotate hex on outboard stud until clamp is level.

4. See Figure 7. Position the WEDGE ATTACHMENT (HD-95637-46A) on the inboard side of the thrust washer, and turn the hex nuts an equal number of turns to draw the halves of the wedge together.

NOTICE

Install wedge attachment only so far as necessary to ensure positive contact with bearing inner race. Installing tool with more contact than necessary will result in damage to the flywheel (00500b)

5. Obtain two 3/8-16 x 6-1/2 inch long bolts and flat washers. Install the flat washers on the bolts. Obtain the bridge, forcing screw and hardened plug from the MAINSHAFT BEARING INNER RACE PULLER/ INSTALLER (HD-34902B).

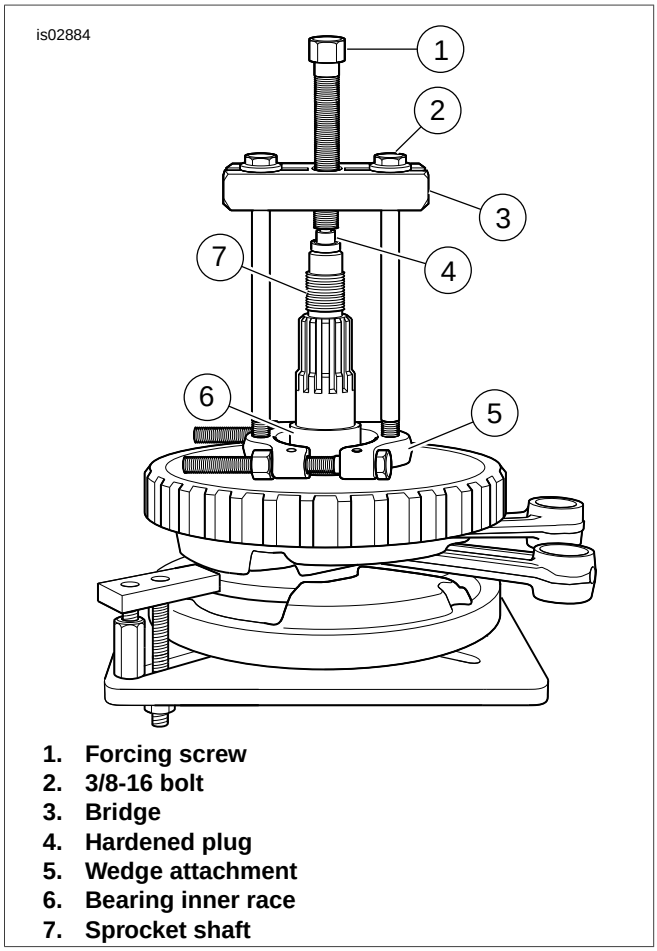
6. Slide one bolt into the channel on each side of the bridge so that the flat washer is between the bridge and bolt head. Thread the bolts into the wedge attachment an equal number of turns.

7. Sparingly apply graphite lubricant to the threads of the forcing screw to prolong service life and verify smooth operation. Start the forcing screw into the center hole of the bridge.

NOTE

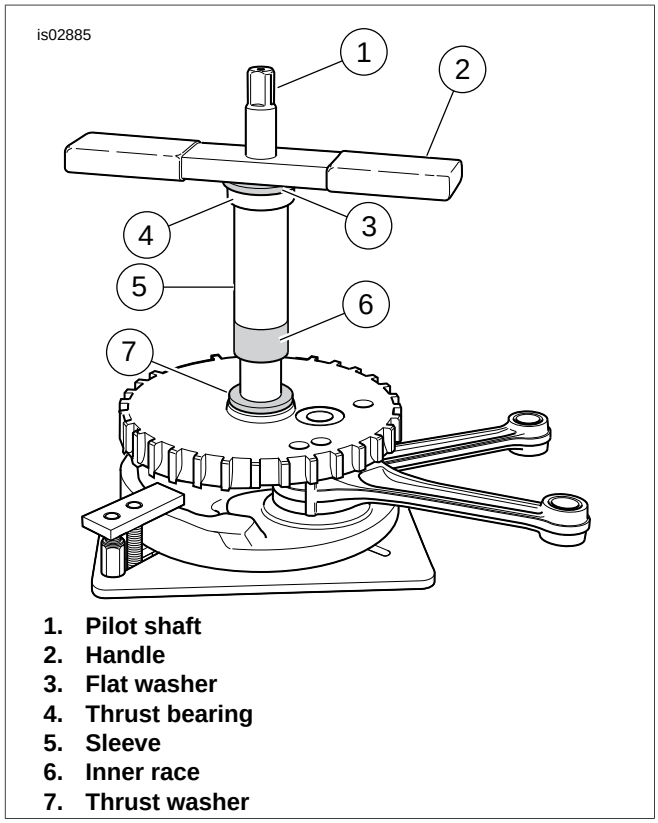
Failure to use hardened plug may result in damage to forcing screw and/or sprocket shaft.

8. Place the cupped side of the hardened plug against the end of the sprocket shaft. Thread the forcing screw into the bridge until the steel ball at the end of the screw makes firm contact with the hardened plug.



1. **Forcing screw**
2. **3/8-16 bolt**
3. **Bridge**
4. **Hardened plug**
5. **Wedge attachment**
6. **Bearing inner race**
7. **Sprocket shaft**

Figure 8. Inner Race From Sprocket Removal



1. **Pilot shaft**
2. **Handle**
3. **Flat washer**
4. **Thrust bearing**
5. **Sleeve**
6. **Inner race**
7. **Thrust washer**

Figure 9. Thrust Washer and Bearing Inner Race Installation

⚠WARNING

Be sure to follow manufacturer's instructions when using the Robinair Heat Gun or any other radiant heating device. Failure to follow manufacturer's instructions can cause a fire, which could result in death or serious injury. (00379a)

- Always keep hands away from tool tip area and heat shrink attachment.
- Be sure to turn the "ON/OFF" switch to the "OFF" position after use.

9. Using the Robinair Heat Gun (HD-25070), uniformly heat the bearing inner race for about 30 seconds.

NOTE

To facilitate removal without heat, apply a light penetrating oil to shaft and leading edge of bearing inner race.

NOTE

Never use both heat and penetrating oil. Use only one or the other. Heat can cause the penetrating oil to ignite resulting in flames or fire.

10. Turn the forcing screw until the thrust washer (and bearing inner race) moves approximately 1/8 inch (3.2 mm).
11. Turn the hex nuts an equal number of turns to separate the halves of the WEDGE ATTACHMENT.

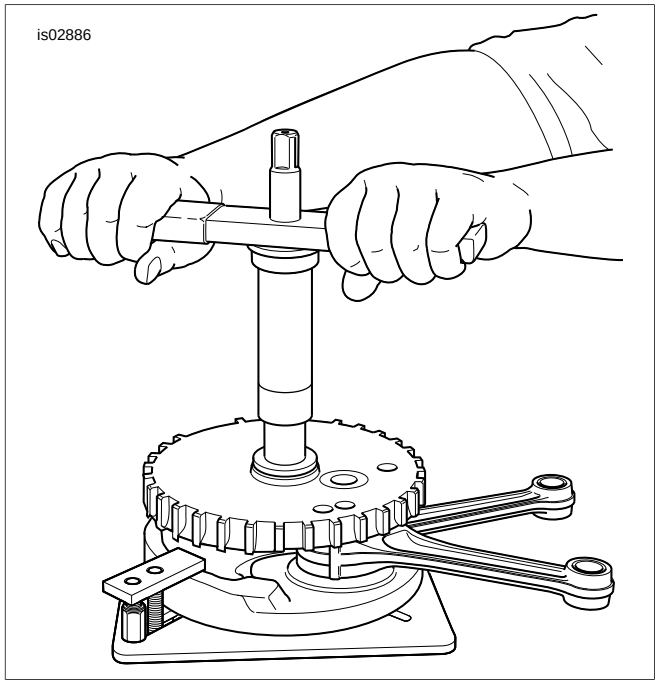


Figure 10. Inner Race onto Sprocket Installation

12. After bottoming the thrust washer on the shaft, reposition the WEDGE ATTACHMENT (HD-95637-46A) on the inboard side of the bearing inner race. Turn the hex nuts an equal number of turns to draw the halves of the wedge together.

NOTICE

Install wedge attachment only so far as necessary to ensure positive contact with bearing inner race. Installing tool with more contact than necessary will result in damage to the flywheel (00500b)

13. Verify that the tool assembly is square, so that the bearing inner race is not cocked during removal.
14. See Figure 8. Using the Robinair Heat Gun (HD-25070), uniformly heat the bearing inner race for about 30 seconds using a circular motion.

NOTE

To facilitate removal without heat, apply a light penetrating oil to shaft and leading edge of bearing inner race.

15. Turn the forcing screw until the bearing inner race is pulled free of the sprocket shaft.
16. Remove the thrust washer from the sprocket shaft.
17. Discard the bearing inner race and thrust washer.

Installation

NOTE

DO NOT re-use the thrust washer removed from the sprocket shaft in the previous step.

1. Place a new thrust washer (4) from the kit over the sprocket shaft with the ink stamp facing outside (and the chamfer on the ID toward the flywheel).
2. Place the new bearing inner race (5) on the bench top. Using the Robinair Heat Gun (HD-25070), uniformly heat the bearing inner race for about 60 seconds using a circular motion.
3. Wearing suitable gloves to protect hands from burns, place the heated bearing inner race over the sprocket shaft.

NOTE

To facilitate installation without heat, apply a light penetrating oil to shaft and leading edge of bearing inner race.

NOTE

Never use both heat and penetrating oil. Use only one or the other. Heat can cause the penetrating oil to ignite resulting in flames or fire.

4. See Figure 2. Obtain the SPROCKET SHAFT TAPERED ROLLER BEARING CONE INSTALLER (HD-97225-55C). Assemble tool as described below.
   a. Thread the pilot onto the sprocket shaft until contact is made with the shoulder.
   b. Sparingly apply graphite lubricant to the threads of the pilot shaft to prolong service life and verify smooth operation.
   c. Slide the sleeve over the pilot until it contacts the bearing race.
   d. Slide the thrust bearing and large flat washer over the pilot until contact is made with the sleeve.
   e. See Figure 9. Thread the handle onto the pilot shaft.
5. See Figure 10. Rotate the handle of the tool in a clockwise direction until the bearing inner race bottoms against the thrust washer.
6. Remove the handle, flat washer, thrust bearing, sleeve and pilot from the sprocket shaft.
7. Follow the instructions in the applicable service manual for assembly of the remaining components, crankcase assembly and installation in the chassis.

2003-Style Flywheel Removal and Installation

NOTE

The bearing race and one thrust washer will be discarded from the kit (see Figure 6) as the new flywheel comes with a race and thrust washer installed.

1. Follow the instructions in the 2003 or later service manual to remove the existing bearing from the left crankcase half.
2. Follow the instructions in the service manual for assembly of the new bearing (7) and lock ring (6) into the left half of the crankcase.
3. Refer to CRANKCASE ASSEMBLY to assemble the crankcase, using the new thrust washer (4) from the kit, and a new Oil Seal (H-D Part Number 12068), available separately.

NOTE

If installing the engine on a 1999 through 2002 vehicle, also install a new spacer. See the listing on Page 1 of these instructions for the correct spacer for your model motorcycle.

NOTICE

Failure to install correct spacer will lead to insufficient clearance between the alternator rotor and stator, which can result in a failed charging system. (00501b)

4. See BOTTOM END OVERHAUL to assemble the engine bottom end.
5. Follow the instructions under TOP END OVERHAUL in the service manual to assemble the engine top end.
6. Install the engine into the motorcycle chassis. Refer to INSTALLING ENGINE IN CHASSIS in the service manual.